

MicroTCA.4 based LLRF System for the RFQ of C-ADS Injector I

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The C-ADS Injector I consists of one RFQ, two normal conducting bunchers and 14 superconducting cavities. The 325MHz RF frequency RFQ runs in CW mode and an inter-electrode voltage of 55kV is needed to accelerate the 3mA~10mA proton beam up to 3.2MeV. The RFQ is powered by a CW klystron and the RF power in the RFQ is up to 280kW. The high power conditioning of RFQ and beam commissioning of the Injector I are accomplished by the LLRF system based on the MicroTCA.4 standard hardware. The LLRF system supports both CW and duty-adjustable pulsed operation modes for the high power source and the RFQ. The firmware of the FPGA controller, the EPICS IOC and operator interface software are described. The performance of automatic conditioning/operation script program is illustrated.

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